

Protein extraction from forage legumes

Problem

The economic and environmental sustainability of organic animal production is challenged by limited self-sufficiency of high-quality protein and, hence, production relies on imported protein supplements. Knowledge of the production of more local protein sources is needed.

Solution

Fractionation of forage legumes through biorefining allows the production of high-quality protein applicable for monogastric animals, in parallel with fibre feed relevant for ruminants.

Impact

The knowledge obtained in ProRefine will support the implementation of biorefined forage legumes as high-quality protein sources in the European organic sector and will thus contribute to a strengthening of the agricultural sector in Europe as a whole, through improved utilisation of local resources.

Practical recommendation

- **Harvest the forage legume before plant anthesis and transport to biorefining plant. Time between harvest and processing must be limited.**
- **Fractionate the plant into a green juice and a fibrous pulp.**
- **Precipitate the soluble protein in the juice using heat treatment (preferably 80 degrees Celsius).**
- **Ideally, dry the precipitated protein into a stable product or, alternatively, freeze for later use.**



Photos: Experimental field with lucerne (left) and juice production (right), Foulum, Denmark.

Applicability box

Theme

Feed production

Keywords

Animal production, protein, biorefinery, sustainability, self-sufficiency

Geographical coverage

Countries relying on imported feed protein

Required time

Can be applied immediately, but method is continuing to develop

Period of impact

Continuous

Equipment

Screw-press, heat system, decanter, equipment for drying

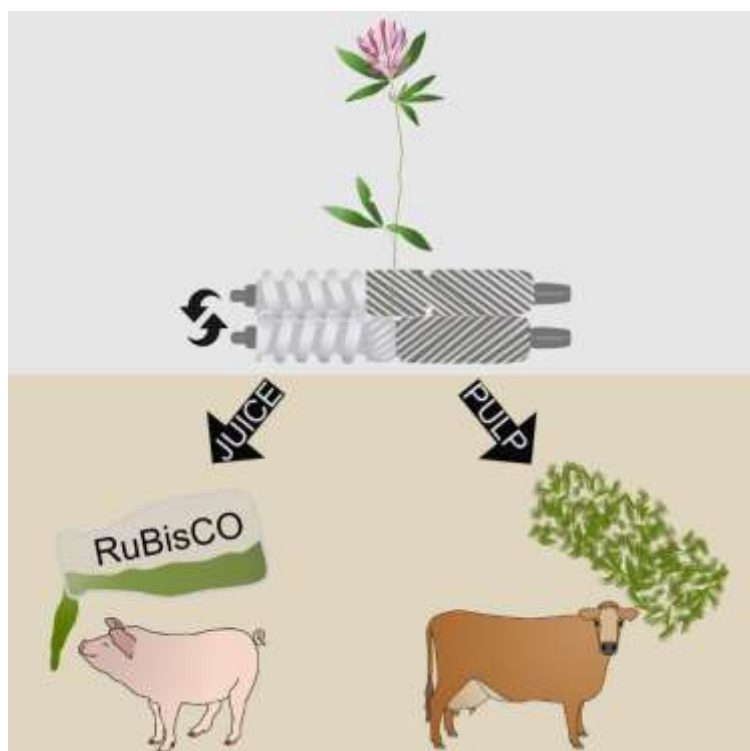


Figure: Protein concentrate from green juice of biorefined forage legumes is rich in RuBisCo-protein and is a valuable feed in pig production. The pulp can be used as feed for ruminants (illustration by Brooke Micke, SLU).

Further information

Weblinks

<https://organic-farmknowledge.org/tool/36474>

About this practice abstract and ProRefine

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Project website: <http://projects.au.dk/coreorganiccofund/research-projects/prorefine/>

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